EXECUTIVE SUMMARY

Site Background

Sierra Army Depot (SIAD) is located in Lassen County in northeastern California, approximately four miles west of the California-Nevada state border and five miles east of U.S. Highway 395. SIAD lies within the Honey Lake Valley and is bordered by the Amedee and Skedaddle Mountains to the north, the Fort Sage Mountains to the south, and the Diamond Mountains to the southeast. The two largest communities near SIAD are Susanville, California (county seat of Lassen County), located 40 miles northwest of SIAD, and Reno, Nevada, located 55 miles southeast of SIAD. The town of Herlong and the Sage Flats area are located near the southern entrance to the Main Depot (Figure 2-1).

Phase 3 of the Range Inventory identified seven Military Munitions Response Program (MMRP) sites at SIAD – two closed ranges and five munitions sites (Figure 2-2). The closed ranges at SIAD include the .50 Caliber Firing Range and Rifle Range D. The munitions sites include the 1960 Demolition Area, Block C, Hazard Classification Test Site, Honey Lake Demolition Range C, and Lower Burning Ground. As a result of the research performed for the May 2005 Final Historical Records Review (HRR) conducted as part of the Site Inspection process, several of these sites were modified. The resulting Munitions Response (MR) sites were modified and are depicted on Figure 3-4.

The .50 Caliber Firing Range (SIAD-006-R-01) extends from east to west and is located in the northwest portion of the Main Depot Area. The closed range is comprised of approximately 1,350 acres. The .50 Caliber Firing Range is bordered on the south by the 1960 Demolition Area and on the west by Honey Lake Demolition Range C. An operational Explosive Ordnance Disposal (EOD) range borders the southwest portion of the range, and an operational 7.62mm range is located to the east.

The 1960 Demolition Area (SIAD-007-R-01) is located in the west-central portion of the Main Depot Area and is comprised of approximately 128 acres. The northern three quarters of the 1960 Demolition Area overlap the .50 Caliber Firing Range.

Block C (SIAD-008-R-01) is the site of an accidental explosion of ten Bomb Live Unit (Daisy Cutter) bombs located in the south-central portion of the Main Depot Area. The site consists of approximately 0.62 acres.

The Hazard Classification Test Site (SIAD-009-R-01) is located in the western portion of the Main Depot Area and is comprised of approximately 165 acres. The site is bordered on the north by Honey Lake Demolition Range C and on the east by an operational EOD range.

Honey Lake Demolition Range C (SIAD-010-R-01) is located along the northwestern boundary of the Main Depot Area. The site is comprised of approximately 861 acres. The site is bordered to the east by the .50 Caliber Firing Range and to the south by the Hazard Classification Test Site. The operational EOD range area is located along the southeastern portion of the range.

The Lower Burning Ground (SIAD-012-R-01) is located near the northeast corner of the Main Depot Area and encompasses a large, irregular shaped area that measures approximately 5,300 feet by 1,800 feet and is comprised of approximately 1,315 acres.

Rifle Range D (SIAD-011-R-01) is located southwest of the Main Depot Area. The range fan for this range extends from south to north along the western boundary of SIAD. Rifle Range D is comprised of approximately 519 acres and is currently undeveloped.

During the SI field work, one of the SIAD security officers mentioned that he had found three bombs in the area east of the operational EOD Area, in the former Alpha Team Training Area. After receiving approval from the SIAD point-of-contact (POC) and from USACE, TechLaw had its UXO safety specialist inspect the site. The three bombs were located and identified as a MK82 500-pound bomb, a MK83 1,000-pound bomb, and a FAB-500 USSR 1,000-pound bomb. This area has been added as a new MR site encompassing approximately 14 acres, as depicted on Figure 3-4.

Site Inspection Activities at the .50 Caliber Firing Range

Site Inspection (SI) activities conducted at the .50 Caliber Firing Range (SIAD-006-R-01) included a visual survey and the collection of surface soil samples. In addition, a small portion was covered as part of a geophysical survey. Visual survey data was collected to evaluate and document potential surface Munitions and Explosives of Concern (MEC) and munitions related items.

The visual survey entailed approximately 44 line miles of random transects at the .50 Caliber Firing Range. A large amount of munitions debris was located at the site. As part of the field work, the area south of the operational 7.62 Range, adjacent to the .50 Caliber Firing Range, was inspected. The area contained large amounts of scrap and fragments, from items such as 40mm grenades, white phosphorous grenades, and flares, as well as several MEC items. Three sticks of High Explosives (HE) and one deteriorating ground burst simulator were also identified. Based on the results of the visual survey, this area was added to the .50 Caliber Firing Range. Large amounts of munitions debris from the 1960 Demolition Area were also located. No anomalies were identified in the area covered as part of the geophysical survey.

Based on the results of the visual survey, it is recommended that the .50 Caliber Firing Range be further investigated for MEC.

The purpose of the sampling activities at the .50 Caliber Range was to determine if Munitions Constituent (MC) contamination is present at the site. A total of 14 soil samples, including two (2) quality control (QC) and one (1) quality assurance (QA) sample were collected at the .50 Caliber Firing Range and were analyzed for explosives and metals. The sampling was focused in the area where munitions related items were located.

The analytical results for metals in the samples collected at the .50 Caliber Firing Range indicate that all sample concentrations were below the applicable screening criteria (i.e.,

the U.S Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goals [PRGs], the California EPA-Modified PRG (arsenic only), and background levels), with the exception of arsenic. Arsenic levels were above the screening criteria in six of the samples. (See Tables 5-7 and 5-8 at the end of Section 5 for a listing of the applicable PRGs, background levels, and sampling results.)

The analytical results indicate that only one explosive compound, 2,4,6 Trinitrotoluene, was detected above the PRG and it was in only one of the samples. Trace amounts of several other explosive compounds were detected, but none of these were above the PRGs. Based on the analytical results, it appears that MC at the .50 Caliber Firing Range should be evaluated further.

Site Inspection Activities at the 1960 Demolition Area

As part of the Historic Records Review, documents were collected regarding the 1960 Demolition Area (SIAD-007-R-01). The results of this document review determined that although previous investigations of the IRP designated site went beyond the scope of an SI, they did not specifically address UXO, but did note a concern for unexploded ordnance. Consequently, the area of 1960 Demolition Area defined by the IRP was not inspected as part of the SI field work. However, the area between the IRP site and the operational EOD area was evaluated during the SI field work and determined to have MEC. Therefore, further investigation of this MR site is recommended.

Site Inspection Activities at Block C

SI activities conducted at Block C (SIAD-008-R-01) included a visual survey and the collection of surface soil samples.

The visual survey entailed approximately 4.8 line miles of random transects at Block C. Two possible munitions related fragments were identified at the site; however, due to the nature of the explosion, it is unlikely that they were from the munitions at this site. Based on the results of the visual survey at Block C and the fact that the accidental high order detonation that occurred would not have resulted in the kick-out of any UXO, it does not appear that any further evaluation of MEC is required at this time.

The purpose of the sampling activities at Block C was to determine if MC contamination is present at the site. A total of eight (8) soil samples, including one (1) QC and one (1) QA sample, were collected at Block C and were analyzed for explosives and metals. Because the Daisy Cutter bombs that detonated at the site contained ammonium nitrate, the samples were also analyzed for ammonia (n) and nitrates. The sampling was focused on the interior of the crater and the surrounding areas.

The analytical results indicate that trace amounts of the explosive compounds 3-Nitrotoluene was detected in two samples and nitroglycerin was detected in one sample. However, all concentrations were below the PRGs. The analytical results for metals in the samples collected at Block C indicate that all sample concentrations were below the applicable screening criteria with the exception of arsenic and iron. Arsenic was above the PRGs in all samples, but only above background levels in four of the samples. Iron

was above the PRGs in three of the samples. Ammonia (n) was present in all samples with results ranging from 0.16 to 2.7 milligrams per kilogram (mg/kg). Nitrate was also present. Results for six of the seven samples were between 0.84 to 11.6 mg/kg. The result for the seventh sample was 346 mg/kg.

Based on the analytical results, it does not appear that any further investigation of MC is required at this time.

Site Inspection Activities at the Hazard Classification Test Site

SI activities conducted at the Hazard Classification Test Site (SIAD-009-R-01) included a visual survey and the collection of surface soil samples.

The visual survey entailed approximately 6.34 line miles of random transects at the Hazard Classification Test Site. A large amount of munitions debris was located near the road that bisected the site. As part of the field work, the area south of the Hazard Classification Test Site, which had been identified as a burn pit in historic aerial photographs, was inspected. Upon inspection, it appeared that the area consisted of a burn pile for a wide variety of munitions and related items such as packing cases. MEC was identified at this site and based on evaluation by the team's UXO specialists and the report generated by the EOD unit responding to the MEC items, it is suspected that the burn pile may contain additional MEC items. This area was added to the Hazard Classification Test Site based on the items found at the site and the possibility that the pile contained MEC. The team also surveyed the area surrounding the burn pile and did not find any munitions related items outside of the newly included area. Based on the results of the visual survey at the Hazard Classification Test Site, it is recommended that this MR site be further investigated for MEC.

The purpose of the sampling activities at the Hazard Classification Test Site was to determine if MC contamination is present at the site. A total of four (4) soil samples, including one (1) QC and one (1) QA sample, were collected and were analyzed for explosives and metals. The sampling was focused on the areas where munitions were located.

The analytical results indicate that trace amounts of the explosive compounds 3-Nitrotoluene was detected in one sample. However, the concentration was below the PRG. The analytical results for metals in the samples collected at the Hazard Classification Test Site indicate that all sample concentrations were below the applicable screening criteria with the exception of arsenic, which was above the PRGs in three samples, but below the background levels.

Based on the analytical results and the fact that for safety reasons, sampling was not possible at the burn pile, further investigation of MEC and MC is recommended.

Site Inspection Activities at Honey Lake Demolition Range C

SI activities conducted at Honey Lake Demolition Range C (SIAD-010-R-01) included a visual survey, a geophysical survey of the northern portion, and the collection of surface soil samples.

The visual survey entailed approximately 26 line miles of random transects at Honey Lake Demolition Range C. MEC was found near the road that bisects the site. One item was also found near the western boundary and two along the western boundary. Results from the geophysical survey indicated that there were numerous anomalies located near an east-west trending, small berm. Based on the results of the visual and geophysical surveys at Honey Lake Demolition Range C, it is recommended that the area be further investigated for MEC.

The purpose of the sampling activities at Honey Lake Demolition Range C was to determine if MC contamination is present at the site. A total of fourteen (14) soil samples, including two (2) QC and two (2) QA sample, were collected and were analyzed for explosives and metals. Based on the types of munitions that were potentially used at this site, the samples were also analyzed for tungsten. The sampling was focused on the areas where munitions were located.

The analytical results indicate that trace amounts of the explosive compounds 1,3,5-Trinitrobenzene (one sample), 3-Nitrotoluene (seven samples), and Cyclotrimethylenetrinitramine (RDX) (one sample) was detected. However, the concentrations were below the corresponding PRGs. The analytical results for metals in the samples collected at Honey Lake Demolition Range C indicate that all sample concentrations were below the applicable screening criteria with the exception of arsenic, which was above the PRGs in twelve samples, but below the background levels. Tungsten was present in amounts that ranged from 0.17 to 0.42 mg/kg. There are no PRGs or background levels for tungsten.

Based on the analytical results, further investigation of MC is recommended.

Site Inspection Activities at the Lower Burning Ground

As part of the Historic Records Review, documents were collected regarding the Lower Burning Ground (SIAD-012-R-01). The results of this document review determined that although previous investigations of the IRP designated site went beyond the scope of an SI, they did not specifically address UXO, but did note a concern for unexploded ordnance. Consequently, the area of Lower Burning Ground defined by the IRP was not inspected as part of the SI field work. Therefore, further investigation is recommended.

Site Inspection Activities at Rifle Range D

SI activities conducted at Rifle Range D (SIAD-011-R-01) included a visual survey and the collection of surface soil samples.

The visual survey entailed approximately 19.6 line miles of random transects at Rifle Range D. One expended 7.62mm blank round was located. No other signs of military activity were found. A pit was observed near the landfill that appeared to have been created by a backhoe. An anomaly was detected using a hand held magnatometer, but based on the debris surrounding the pit, paint cans, and other trash; it appears likely that the site was part of the landfill. Based on the results of the visual survey at Rifle Range D, it is recommended that there be no further investigation for MEC.

The purpose of the sampling activities at Rifle Range D was to determine if MC contamination is present at the site. A total of four (4) soil samples, including one (1) QC and one (1) QA sample, were collected and analyzed for explosives and metals. Because no MEC was located, samples were taken in random locations at the site.

The analytical results indicate that trace amounts of the explosive compound 3-Nitrotoluene (two samples) were detected. However, the concentrations were below the corresponding PRGs. The analytical results for metals in the samples collected at Rifle Range D indicate that all sample concentrations were below the applicable screening criteria with the exception of arsenic, which was above the PRGs in three samples, but below the background levels.

Based on the analytical results, it is recommended that there be no further investigation of MC.

Site Inspection Activities at Alpha Team Training Area

Because the items were not brought to TechLaw's attention until the second to the last day of field work and this was not included in the original scope, no SI field work was conducted other than identifying the items and entering their locations in the GPS log. The POC at SIAD was notified of the finds and in turn notified the EOD detachment at Moffett Field. The items were checked by the EOD team from Moffett Field and it was then verified with explosives that they were not filled with high explosives. The site has been added to the MMRP and it is recommended that a more detailed site walk be conducted at the site and in the surrounding area.